



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 45 TO FACILITY OPERATING LICENSE NO. NPF-86  
NORTH ATLANTIC ENERGY SERVICE CORPORATION  
SEABROOK STATION, UNIT NO. 1  
DOCKET NO. 50-443

1.0 INTRODUCTION

By application dated September 20, 1995 (Reference 1), North Atlantic Energy Service Corporation (North Atlantic/the licensee) proposed an amendment to the Appendix A Technical Specifications (TS) for the Seabrook Station, Unit 1 (Seabrook). The proposed changes would relocate Functional Unit 6.b, "Feedwater Isolation - Low RCS T<sub>avg</sub> Coincident with a Reactor Trip" from TS 3.3.2 "Engineered Safety Features Actuation System Instrumentation", to the *Technical Requirements Manual* which is a North Atlantic controlled document. The relocated requirements include the limiting conditions for operation (LCO) and related surveillance requirements.

2.0 BACKGROUND

Section 182a of the Atomic Energy Act of 1954, as amended (the Act) requires applicants for nuclear power plant operating licenses to include TS as part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The Commission provided guidance for the contents of TS in its "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" ("Final Policy Statement"), 58 FR 39132 (July 22, 1993), in which the Commission indicated that compliance with the Final Policy Statement satisfies Section 182a of the Act. These criteria were subsequently incorporated into the regulations by an amendment to 10 CFR 50.36, 60 FR 36953 (July 19, 1995). In particular, the Commission indicated that certain items could be relocated from the TS to licensee-controlled documents, consistent with the standard enunciated in *Portland General Electric Co. (Trojan Nuclear Plant)*, ALAB-531, 9 NRC 263, 273 (1979). In that case, the Atomic Safety and Licensing Appeal Board indicated that technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon

reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

Consistent with this approach, the four criteria defined by 10 CFR 50.36, for determining whether a particular matter is required to be included in the TS limiting conditions for operations, are as follows:

- (1) Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary;
- (2) a process variable, design feature, or operating restriction that is an initial condition of a Design Basis Accident or Transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;
- (3) a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a Design Basis Accident or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier;
- (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety.

As a result, existing TS requirements which fall within or satisfy any of the above criteria must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other licensee-controlled documents.

### 3.0 EVALUATION

North Atlantic has stated the feedwater isolation function which isolates the main feedwater on low Reactor Coolant System (RCS)  $T_{avg}$  coincident with a reactor trip is not being removed from the plant design and will be relocated to the *Technical Requirements Manual*. The relocation from the TS is justified on the basis that the function is not required for any protective action related to accident mitigation and is not credited in the Updated Final Safety Analysis Report (UFSAR) accident analyses.

Isolation of the feedwater function on low RCS  $T_{avg}$  coincident with a reactor trip precludes overcooling events due to continued feedwater flow following a reactor trip. It also has a function in establishing the design transients which form the basis of the system and components design.

After a reactor trip, the average RCS Temperature ( $T_{avg}$ ) decreases to the no-load temperature due to steam dump actuation and continued feedwater flow. Additionally, for reactor trips from power levels above 50%, the shrink in

steam generator level typically goes below the 10-10 level setpoint, actuating emergency feedwater (EFW). If feedwater flow is not isolated while the RCS is cooling down,  $T_{avg}$  will undershoot the target value of no-load temperature. The addition of EFW further aggravates the undershoot affects. This undershoot could result subsequently in safety injection actuation on low RCS pressure as well as loss of required minimum shutdown margin. Consequently, the nuclear steam supply system was designed with a feedwater isolation on low RCS  $T_{avg}$  coincident with reactor trip.

Westinghouse Electric Corporation performs the Loss of Coolant Accident (LOCA) and related analyses for Seabrook Station. North Atlantic has stated that Westinghouse reviewed and confirmed that the LOCA analyses and related analyses, including large and small break LOCA, reactor vessel and loop LOCA blowdown forces, post-LOCA long term core cooling subcriticality, post-LOCA long term core cooling minimum flow and hot leg switchover to prevent boron precipitation are not affected by the low RCS  $T_{avg}$  feedwater isolation setpoint. Feedwater isolation in these analyses is achieved as the result of the initiation of a Safety Injection. Similarly Yankee Atomic Electric Company (Yankee) performs the non-LOCA safety analyses for Seabrook Station. Yankee has reviewed and confirmed that the isolation of feedwater on low RCS  $T_{avg}$  following a reactor trip is not credited in the non-LOCA safety analyses.

The isolation of feedwater on low RCS  $T_{avg}$  following a reactor trip is generic to Westinghouse plants. Although this function is implemented in the Solid State Protection System, it is not required for any protective action related to accident mitigation. The function is not included in the Westinghouse Standard Technical Specifications in either the NUREG-0452 or NUREG-1431 versions of the Standard Technical Specifications. The Seabrook Station TS are based upon NUREG-0452. North Atlantic has concluded that because feedwater isolation on low RCS  $T_{avg}$  coincident with a reactor trip is not required for either primary or backup protective action, the function can be relocated from TS Table 3.3-3, 3.3-4 and 4.3-2 to the *Technical Requirements Manual*.

Although the feedwater flow isolation feature is not credited in the safety analysis it does perform a control function. In accordance with the guidance of NUREG-1431 and the criteria of 10 CFR 50.36, North Atlantic has concluded this function is not required to be included in the TS and, therefore, has proposed that it be relocated to the *Technical Requirements Manual*. North Atlantic has stated that this function will remain operable and any changes to the setpoint or function will be controlled pursuant to the requirements of 10 CFR 50.59.

The staff has concluded that the instrumentation utilized to cause feedwater isolation on low RCS  $T_{avg}$  coincident with reactor trip does not serve a primary protective function so as to warrant inclusion in the TS in accordance with the criteria of 10 CFR 50.36. The instrumentation does not serve to ensure that the plant is operated within the bounds of initial conditions assumed in design basis accident and transient analyses or that the plant will be operated to preclude transients or accidents. Likewise, the feedwater

isolation on low RCS  $T_{avg}$  coincident with reactor trip instrumentation does not serve as part of the primary success path of a safety sequence analysis used to demonstrate that the consequences of these events are within the appropriate acceptance criteria.

Accordingly, the staff has determined that the requirements for the feedwater isolation on low RCS  $T_{avg}$  coincident with reactor trip monitoring instrumentation do not meet the criteria in 10 CFR 50.36. Furthermore, the limiting conditions for operation and surveillance requirements for this instrumentation are not included in the Westinghouse Standard Technical Specifications in either the NUREG-0452 or NUREG-1431 versions of the Standard Technical Specifications.

In conclusion, these specific instrumentation requirements related to feedwater isolation on low RCS  $T_{avg}$  coincident with reactor trip, are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Act, and are not required to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety. Further, they do not fall within any of the four criteria which were set forth in the Commission's Final Policy Statement and incorporated into 10 CFR 50.36. In addition, the staff finds that sufficient regulatory controls exist under 10 CFR 50.59, or such other specific regulatory control as may be applicable in the particular instance, to address future changes to these requirements. Accordingly, the staff has concluded that these requirements may be relocated from the TS to North Atlantic's *Technical Requirements Manual*.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Hampshire and Massachusetts State officials were notified of the proposed issuance of the amendment. The State officials had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (60 FR 54524). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.



6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 29, 1995